of a common origin of the asteroids between Mars and Jupiter, with some or even all of the comets. The grounds of analogy which have been deduced from the nebulous envelopes of the asteroids must, according to all more recent and accurate observations, be renounced. The orbits of the small planets are not parallel to each other; that of Pallas certainly presents the phenomenon of an extreme inclination; but, with all the want of parallelism between their own orbits, still *they do not intersect in a cometary manner* any one of the orbits of the large older, *i. e.*, earlier discovered planets This circumstance, so extremely essential in every assumption of a primitive projectile direction and projectile velocity, appears, besides the difference in the physical constitution of the *interior* comets, and the entirely vaporless *small planets*, to render the similarity of origin of both kinds of cosmical bodies very improbable. Laplace, also, in his theory of planetary genesis from rings of vapor revolving round the Sun, in which matter aggregates into spheres around a nucleus, considered it necessary to separate the comets from the planets: "*Dans l'hypothèse des zones de vapeurs et d'un noyau s'accroissant par la condensation de l'atmosphère qui l'environne, les comètes sont étrangères au système planétaire.*"* "According to the hypothesis of zones of vapor, and of a nucleus increasing by the condensation of the atmosphere which surrounds them, the comets are strangers to the planetary system.'

We have already directed attention, in the *Delineations of Nature*,† to the fact that the comets at the same time possess the smallest *mass*, and occupy the largest *space*, of any bodies in the solar regions; in their number, also, they exceed all other planetary bodies; the theory of probabilities, applied to the data of the equable distribution of the *orbits*, the *boundaries*, the *perihelions*, and the possibility that *some*

20, p. 181. The author distinguishes, with Hind (Schum., *Astr. Nachr.*, No. 724), "the comets of short period, whose semi-axes are all nearly the same with those of the small planets between Mars and Jupiter; and the other class, including the comets whose mean distance or semi-axis is somewhat less than that of Uranus." He concludes the first essay with this remark: "Different facts and coincidences agree in indicating a near appulse, if not an actual collision, of Mars with a large comet in 1315 or 1316, that the comet was thereby broken into three parts, whose orbits (it may be presumed) received even then their present form, viz., that still presented by the Comets of 1812, 1815, and 1846, which are fragments of the dissevered comet."

* Laplace, *Expos. du Syst. du Monde* (ed. 1824), p. 414.

† On Comets: in the *Delineation of Nature*, see *Cosmos*, vol. i., p 100–110.